

We claim:

1. A computer implemented method of performing a process, the method comprising:
receiving a modification to data associated with the process;
identifying workflow steps from a table of workflow steps based on the modification; and
invoking a workflow engine to enforce state transitions in the process based on the table
of workflow steps.

Sub B1 / 2. A computer-readable medium having computer-executable instructions to cause a
computing system to perform a method comprising:
creating a data table in a server database;
creating a workflow table in the server database, wherein the workflow table is associated
with the data table, wherein each row in the workflow table represents a workflow step
containing workflow rules and associated code defined by script functions;
receiving a data modification request in the server database;
invoking a workflow engine using server database triggers; and
evaluating a condition and executing an action for at least one workflow step.

3. The method of claim 2, wherein evaluating a condition and executing an action for at least
one workflow step includes using a script engine which is invoked by the workflow engine.

4. A workflow system comprising:
a server database including a data table and an associated workflow table;
a workflow extended store communicatively coupled to the server database;

a workflow engine communicatively coupled to the server database and to the workflow extended store; and

a script engine communicatively coupled to the workflow engine.

Sub B1 } 5. The workflow system of claim 4 wherein the workflow table is communicatively coupled to the workflow engine.

6. The workflow system of claim 4 wherein each column in the data table comprises a workflow state.

7. The workflow system of claim 4 wherein each row in the workflow table comprises a workflow step.

8. The workflow system of claim 4 wherein the workflow table comprises a set of workflow rules and associated code to be executed by the workflow engine, wherein a workflow table is defined for each data table that needs to enforce integrity of data changes.

9. The workflow system of claim 4 wherein the extended store comprises a data set having the necessary information to enforce a workflow step.

10. The workflow system of claim 4 wherein the workflow engine is implemented as a COM component and can run both in-process and out-of-process, wherein the workflow engine receives information on a workflow event from the extended store and maps the information against a cached copy of the workflow table and executes an appropriate workflow step.

11. A workflow system comprising:

a server database including a data table and an associated workflow table, wherein each row in the workflow table comprises a workflow step;

a workflow extended store communicatively coupled to the server database;

a workflow engine communicatively coupled to the server database, to the workflow extended store, and to the workflow table; and

a script engine communicatively coupled to the workflow engine.

12. The workflow system of claim 11, wherein each workflow step is triggered by a workflow event selected from the group comprising state events, transition events, and timeout events.

13. The workflow system of claim 12, wherein a state event is associated with a single workflow state and is executed every time the event associated with the workflow state is triggered.

14. The workflow system of claim 13, wherein the execution of a state event depends on how a workflow state is entered or exited.

15. The workflow system of claim 12, wherein a transition event is associated with a change from a current workflow state to a new workflow state, wherein the current and the new workflow states are defined by a transition workflow step, and wherein the transition event is executed upon a requested state transition where the current and the new workflow state match the transition workflow step.

16. The workflow system of claim 12, wherein a timeout event is associated with a timeout job, wherein the timeout event can be either a state event or a transition event, and wherein the timeout event is triggered by the timeout job.

17. A workflow system comprising:

a server database including a data table and an associated workflow table, wherein each row in the workflow table comprises a workflow step, and wherein the system further includes workflow triggers defined on the data table;

Sub B1 } a workflow extended store communicatively coupled to the server database, wherein the workflow triggers analyze a data modification request submitted to the data table and invoke the extended store;

a workflow engine communicatively coupled to the server database, to the workflow extended store, and to the workflow table; and

a script engine communicatively coupled to the workflow engine.

18. The workflow system of claim 17, wherein the workflow engine is tier-agnostic.

19. The workflow system of claim 17, wherein the system further includes a session object communicatively coupled to the server database, wherein the session object comprises a set of properties for a workflow event, a set of data on the current user, a database user list, and a data set of user permission.

20. The workflow system of claim 19, wherein the system further includes a number of workflow support functions which operate in conjunction with the session object and implement a number of workflow tasks including sending email and finding a user's manager.

21. The workflow system of claim 17, wherein the system further includes a timeout agent implemented as a server job, wherein the timeout agent is scheduled to run with a definable frequency, and wherein the timeout agent scans the server database and executes an timeout workflow event when the database indicates such an ontimeout workflow event is due.

22. The workflow system of claim 21, wherein the timeout agent performs an update in the data table and triggers an association workflow action upon timeout workflow events which define a state transition.

23. A computing method comprising:

creating a data table in a server database;

creating a workflow table in the server database, wherein the workflow table is associated with the data table, wherein each row in the workflow table represents a workflow step;

receiving a data modification request in the server database;

invoking a workflow engine using server database triggers; and

evaluating a condition and executing an action for each workflow step using a script engine which is invoked by the workflow engine.

24. The method of claim 23, wherein invoking the workflow engine includes comparing the data modification request with a workflow definition in the workflow table and determining the appropriate workflow step to be executed.

25. The method of claim 23, wherein evaluating a condition and executing an action for each workflow step includes checking execution permissions on each workflow step.

26. The method of claim 23, wherein creating a workflow table with each row in the workflow table representing a workflow step includes defining a condition and an action for each workflow step using script functions.

27. The method of claim 25, wherein the script functions are both declarative and procedural in form.

28. The method of claim 23, wherein evaluating a condition and executing an action for each workflow step includes committing the data modification request to the data table in the server database.

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29. A computer comprising:

a processor;

a computer-readable medium;

a server database having a data table and an associated workflow table;

a workflow extended store communicatively coupled to the server database;

a workflow engine communicatively coupled to the server database and to the workflow extended store; and

a script engine communicatively coupled to the workflow engine.

30. A computer-readable medium having stored thereon a data structure comprising:
a first data field containing a unique identifier for a given workflow action in a workflow process;

a second data field containing a name for the workflow action;

a third data field containing a state name;

a fourth data field containing a state event name or NULL for a state-bound workflow steps or a final state name for a transition bound workflow step

a fifth data field containing a name of workflow events;

a sixth data field a script expression or function that evaluates a workflow step condition to either True or False; and

a seventh data field containing a function which implements the actions that should take place during a current workflow step.

31. A computer readable medium having a workflow table stored thereon, each row of the workflow table corresponding to a workflow step having interrelated fields comprising:

a unique identifier for an action to be taken in a workflow process step;

a state representing a status of the workflow process;

a nextstate representing a next state of the workflow process as a result of the action;

a condition identifying a condition which must be satisfied; and

an action identifying a function which is executed on satisfaction of the condition to complete the step.

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